ANTI-QUAKE, ANTI-TERRORISM CONCEPTS FEATURED IN INTEGRAL FLYOVERS

By

Prof Mahesh Tandon

Managing Director, Tandon Consultants Pvt Ltd

ABSTRACT

Integral bridges may well be bridges of the future due to their inherent merits of durability, high aesthetic appeal, superior seismic performance, robustness against terrorist-vandal attacks and maintenance free performance in the absence of bearings and expansion joints. The enhanced knowledge along with the sophisticated computer aids makes it possible to conceive, analyze and design integral bridges.

Design difficulties, both imaginary and real, have held back the application of integral bridges in actual practice.

This paper discusses some applications of the Integral Bridges, the design of which were carried out by the author's firm. The experience and development work spread over many years on integral bridges have culminated in the realization of state-of-the-art flyover projects in the capital city of Delhi.

Integral Bridges are characterized by monolithic connection between the deck and the sub-structure (piers and abutments). Such bridges require less maintenance, are more durable and present more robustness.

PRACTICAL APPLICATIONS OF SEISMIC DESIGN OF BRIDGES

By

PROF MAHESH TANDON
MANAGING DIRECTOR, TANDON CONSULTANTS PVT LTD

Abstract

Unlike buildings, the direct loss of human life is not huge in the event of a bridge collapse during an earthquake. However, bridges often provide the critical means of post-disaster relief to the affected community. Also, the economic and social losses that result from a bridge collapse can be phenomenal.

The current international practice has now shifted towards a performance based engineering design, wherein the accent is on serviceability and safety under different levels of magnitude of earthquakes. The Indian Codes (Refs 1, 2) have yet to adopt this approach. There is an increasing realization that apart from traditional techniques for improving ductility, the structural engineer's tool-box should include energy-dissipating and energy-sharing devices and those that can control the response of the system.

There have been further advances on appropriate methods and devices of preventing ‘dislodgement’ or ‘unseating’ of the superstructure in the event of severe ground shaking.

How these ideas have been utilized in practical applications of earthquake resistant design of bridges is the subject of this paper.